

GOOD OPERATING PRACTICES FOR TRAY PACK CANS OCT 03 1991

I. RECEIPT OF MATERIAL.

The receipt of materials must be done in a separate area from processing, and the quality control department will be responsible to perform a receipt inspection per the requirements of the contract. All personnel involved in the inspection o-r the raw materials must be educated on the specifications and requirements. Upon approval, the materials must be segregated and stored in compliance with the requirements of the specification and standards involved.

Prior to being placed in inventory ingredients susceptible to microbiological quality should be received under a supplier's guarantee that they are of a microbiological quality suitable for use in processing foods. Products must be held prior to processing in such a manner as to prevent significant growth of microorganisms.

The cans must also go through a receipt inspection and handled with care during inspection. Defects that employees should look for on the cans; rust, corrosion, dents, holes, deterioration of sealed compound, proper coating and application.

It should also be pointed out that the USDA has enacted a policy that no longer allows buffing of tray pack cans.

II. EMPLOYEES

All quality control personnel must have complete understanding of the specifications and requirements under the contract, and production should be closely monitored while randomly pulling samples to verify the quality of the product. and that it is meeting the end item criteria.

It is the responsibility of the contractor to train personnel to be familiar with the requirements. During production, the employees should be trained to be familiar with defects outlined in the specification in order to ensure a proper screening procedure.

It is required that the supervisors of the retort operations complete an Accredited Better Processing Control School. The supervisors should also be certified by the plant's processing authority as being qualified to supervise and review the plants retort operations.

III. PROPER USE OF PRODUCT CONTAINERS

Product containers must never be used for anything except their intended purpose. This must be followed to avoid misused containers from accidentally finding their way back can to the production line and resulting in the packing of food in the same container with very objectionable or dangerous material.

Empty containers should be removed from the packing room and from conveyors before production lines are washed down.

IV. WORK CONDITIONS

The plant condition is extremely important to provide a safe and positive working area for employees.

For the on-line inspections to be performed properly, there must be adequate lighting and adequate time to inspect the product.

An approved pest management plan must be incorporated with close monitoring of this plan to ensure that the standards are being met.

V. PROCESSING AND EQUIPMENT

A. Blanching when required in the preparation of food for canning should be effected by heating the food to the required temperature holding it at this temperature for the required time, and then either rapidly cooling the food or passing it to subsequent processing without delay. Thermophilic bacterial growth in blanchers is minimized by the use of adequate operating temperature and by cleaning at least every four hours.

- B. Overfilling or careless filling procedures may result in product being forced out of the tray during closure, becoming trapped in the seams and possibly leading to leakers.

A number of tray products contain items which require a specific orientation. Any deviation from the pattern used to establish the thermal process, could alter the heating characteristics and subsequently the process time..

- C. Container closure equipment shall be so located, and installed as to be capable of being readily observed, maintained and adjusted. The tray sealers should be kept clean and the rolls inspected routinely to prevent pitting or buildup, which could result in corrosion around the seam area. The hermetic sealing of cans depends on the formation of what is termed a double seam, formed by mechanically interlocking and ironing the curl of the can end and the flange of the can body. In order to measure and evaluate the double seam, it is necessary to become familiar with its terminology and construction. Double seam schools and workshops are available from most container manufacturers. Attendance at these schools is highly recommended for all plant personnel who are responsible for maintaining, recording and inspecting container double seams. The finished double seam shall meet the dimensions and tolerances recommended by the can supplier. A seam Quality Control Form for the tray is available from the can supplier.
- D. The half tray utilizes a mechanical vacuum system. In this case the seaming operates in a vacuumized environment, thereby creating a vacuum in the sealed container. Extreme deviations in temperature or headspace volume should be avoided so as to minimize adverse effects on the final can vacuum. Although not a mandatory requirement, the routine measurement of the vacuum present in a can is often undertaken. However, due to the physical structure of the tray, it is difficult to obtain an accurate reading of vacuum using a puncture gauge. Therefore, the judgment of container soundness is based on the tray exhibiting a concave end, non bulging and no slack or loose metal.
- E. Where necessary, filled and sealed trays shall be thoroughly washed before sterilization to remove grease, dirt and product from the outside of the container. After sterilization not only may it be much more difficult to clean containers but washing after sterilization increases the risk of post processing contamination unless carefully controlled and is therefore not advised. Particular attention should be given to the exterior condition of the double seam area, as any accumulation of product, dirt or soil at this point can increase the chance of post processing contamination of the product. Such accumulations can be removed more effectively prior to heat processing.
- F. Because of the unique, rectangular, design of the tray, the conventional retort loading systems require modifications to achieve adequate heat distribution in the retort. The retort crates of vertical and horizontal still retorts as well as steam/air require crate modifications. * Rotamats do not require modification due to the rotation, water circulation and crate design.

With the exception of the rotation retorts, separator sheets are not recommended. The crates should be open on all sides with an open area between tray layers for water circulation.

A rust inhibitor added to the retort water is recommended.

- G. Differences between retorting cylindrical metal containers and the half tray. There are four principal differences:
1. With the exception of a steam/air retort, the tray is processed under water.
 2. Steam-air and/or water circulation is used to provide heat distribution within the retort.
 3. Air pressure override is used during both the heating and cooling cycles.
 4. The temperature in the retort is controlled independently of the pressure.
- H. The heat expansion characteristics of the half tray require protection from excess pressure differentials which might produce buckling. Although the half tray itself may withstand the temperatures involved in steam processing, cooling the containers after sterilization would present a buckling problem.

The large surface area of the tray end results in a decrease in resistance to thermal expansion. Therefore, to prevent the tray from buckling, it is necessary to establish a condition in the retort where the pressure outside the closed container

will be the greater than the pressure inside. This shall be accomplished by the addition of super-imposed air to the retort. The retort pressure shall be controlled by an automatic pressure control unit. A non-return valve shall be provided in the air- supply line to prevent water from entering the system.

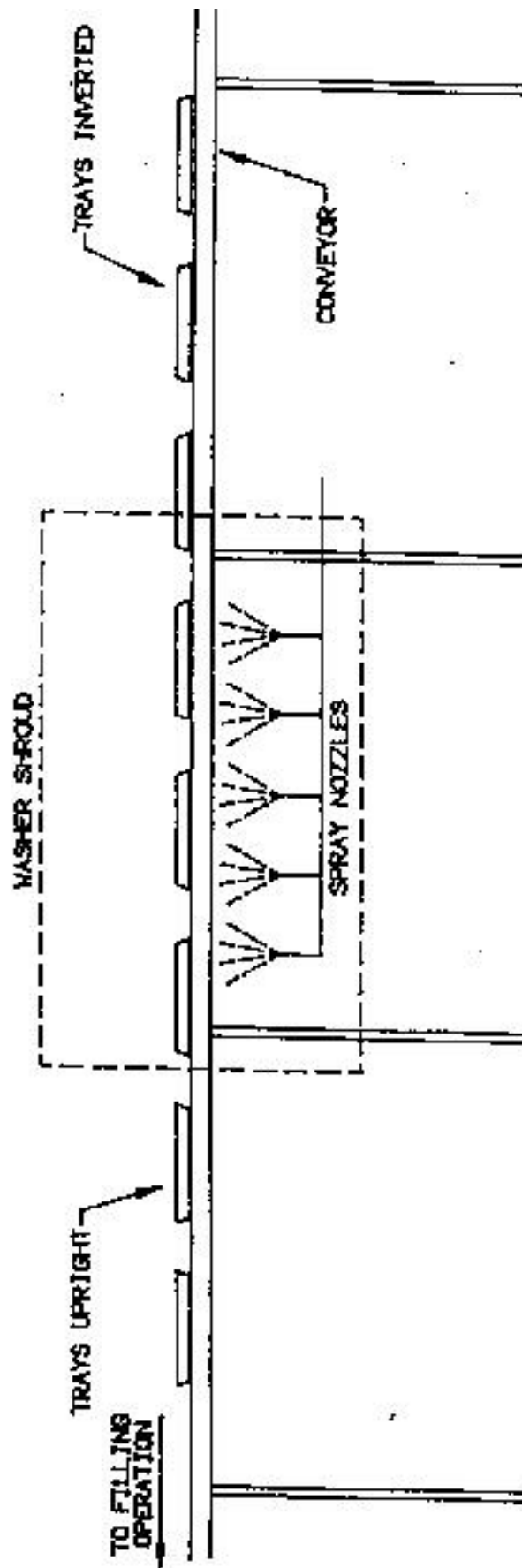
- I. Since the retort pressures involved in half tray processing are higher than those used with normal steam cooks, it is necessary that the retort have sufficient strength to insure safe operation at the superimposed air pressure levels. There should be enough space (about 1 1/2" clearance between the sidewall of the crate and the retort wall) to allow free circulation of the water level and the top of the retort to provide the necessary headspace to control the overriding pressure (4-6" water over the trays). There shall be some method of determining water levels in the retorts during their operation. Water shall cover the top layer of containers by at least 4 to 6" during the entire come-up time, heat processing and cooling periods. An automatic warning device should be incorporated to notify the retort operator, if the water level should drop below a safe level. Both the temperature distribution and the rates of heat transfer are critically important in the operation of steam/air retorts. There shall be a means of circulating the steam/air mixture, to prevent formation of low temperature pockets. The circulating system used shall provide acceptable heat distribution as established by adequate tests. The operation of the processing system shall be the same as that required by the scheduled process. A recording pressure controller shall control the air inlet and the steam/air mixture outlet.

Heat processing and associated processing operations shall be performed and supervised only by properly trained personnel. It is extremely important that the heat processing is carried out by operators with the supervision of personnel who understand the principles of heat processing and who realize the need to follow instructions closely. Supervisory personnel are required to have obtained a certificate of competency from an approved thermal processing course.

- J. Trays shall be cooled as rapidly as possible through the range of 100 degrees P'. Further cooling is done in air to evaporate the adhering water film. This aids in preventing corrosion and microbial contamination. cooling water must be of potable quality,, and be chlorinated and maintained at measurable chlorine residual or be otherwise suitably treated.
- K. Bi-metallic corrosion is a very serious and common occurrence with metal containers in contact with the variety of metals being used in retort crates. This 'type of corrosion appears as a heavy black deposit, primarily around the metal to metal contact areas, however it can appear anywhere on the outside surface of the tray. This type of corrosion can be prevented by either coating the surface of the retort crates with materials such as epoxy or Teflon, or .using plastic strips to support the tray, thus preventing metal to metal contact. This method also serves to protect the tray exterior from excessive scratching when loading and unloading into retort crates.

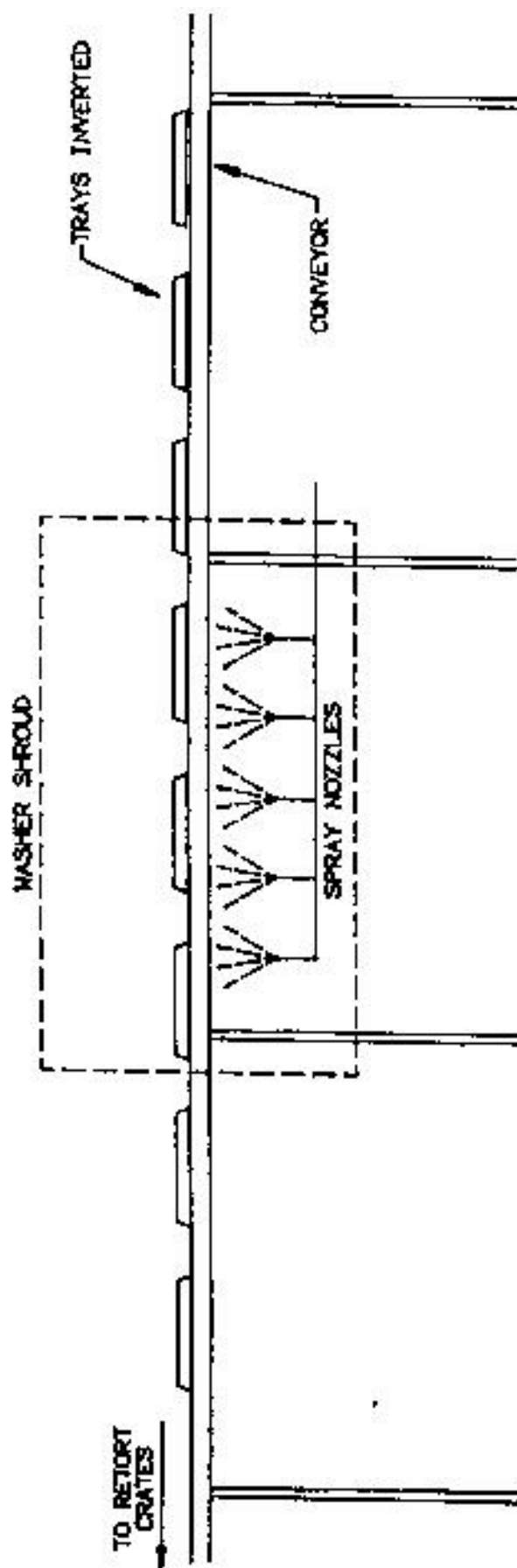
V. END ITEM

The finished product must comply with the end item criteria. The product should also be looked at for nonwholesome units, correct palletizing, labeling and correct coding. During packing of the cans it is important to avoid can to cart contact to avoid any further damage, and handle with care while packing the cans into the final case.



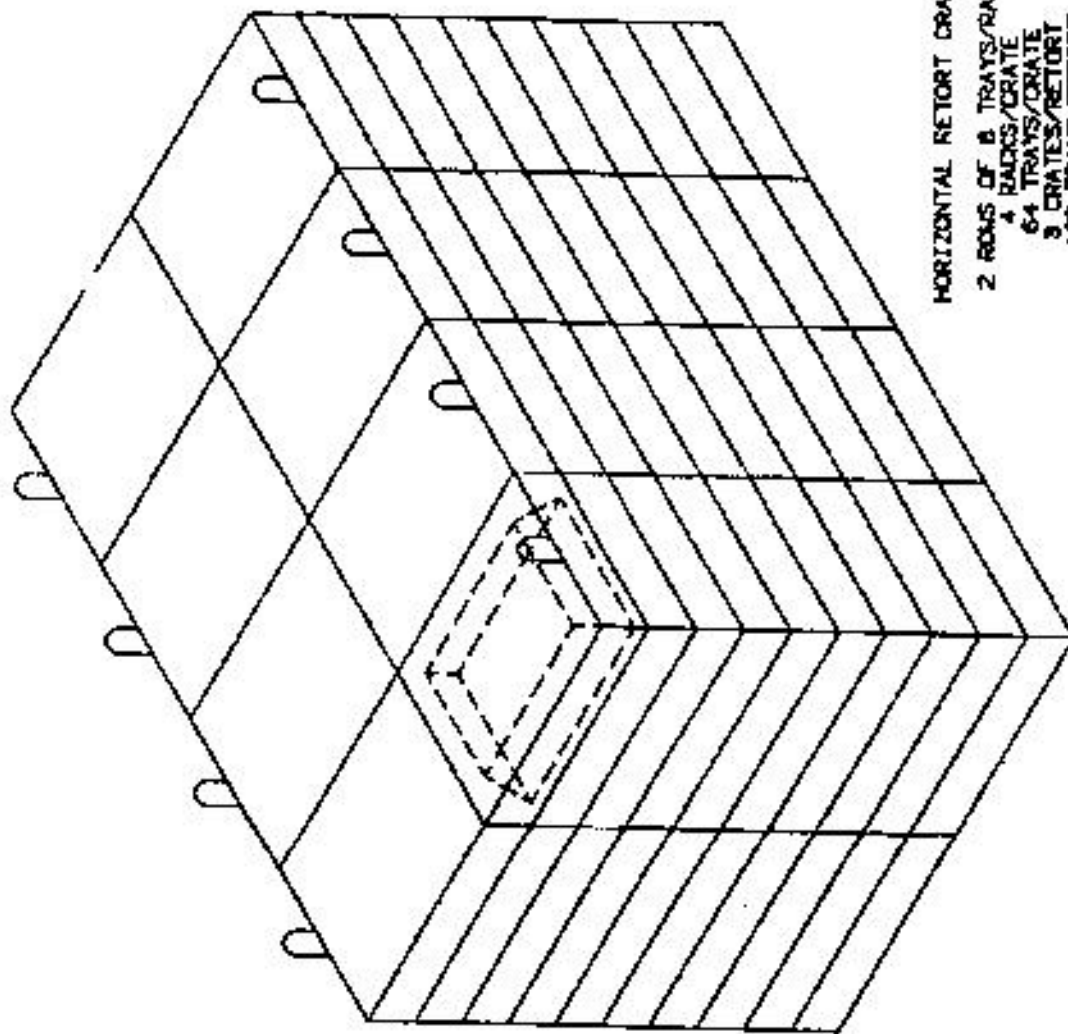
HALF TRAY WASHER

FIGURE 1

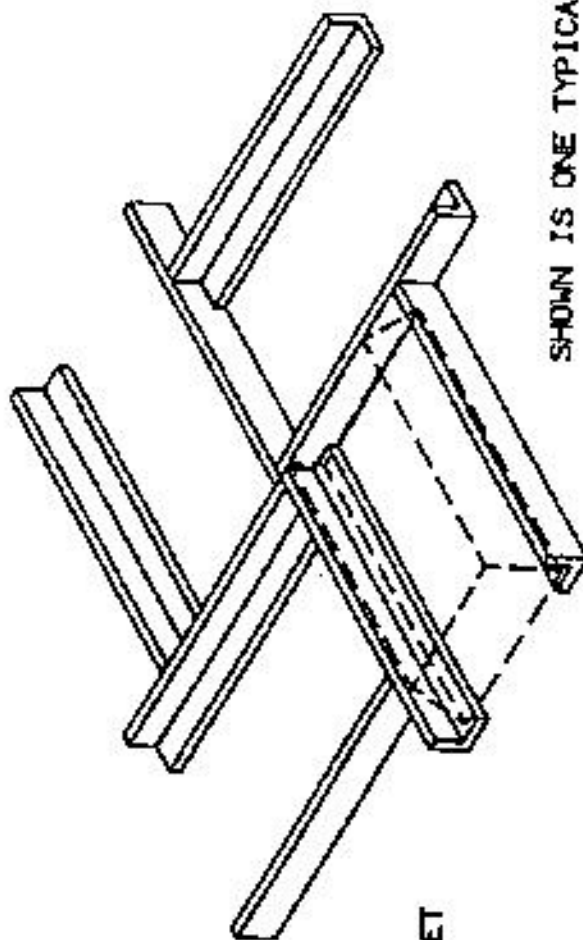


HALF TRAY WASHER AFTER SEAMER

FIGURE 3



HORIZONTAL RETORT CRATES
 2 ROWS OF 8 TRAYS/RACK
 4 RACKS/CRATE
 64 TRAYS/CRATE
 3 CRATES/RETORT
 192 TRAYS/RETORT



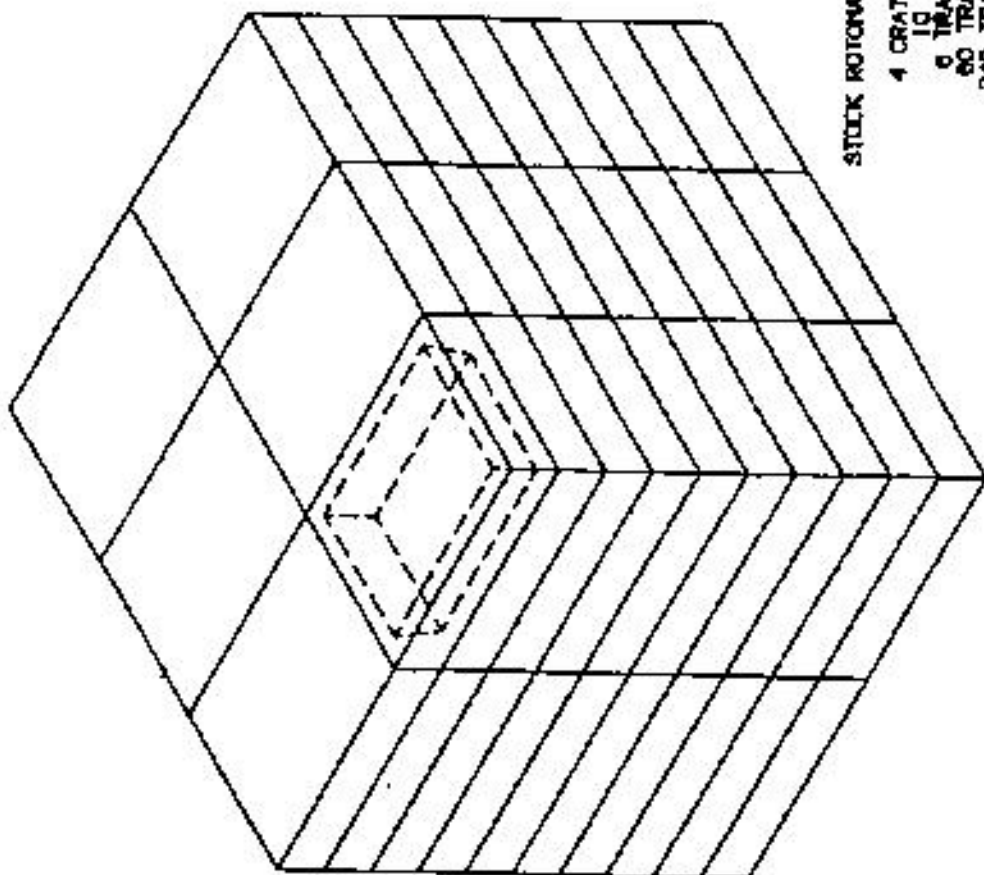
SHOWN IS ONE TYPICAL LAYER

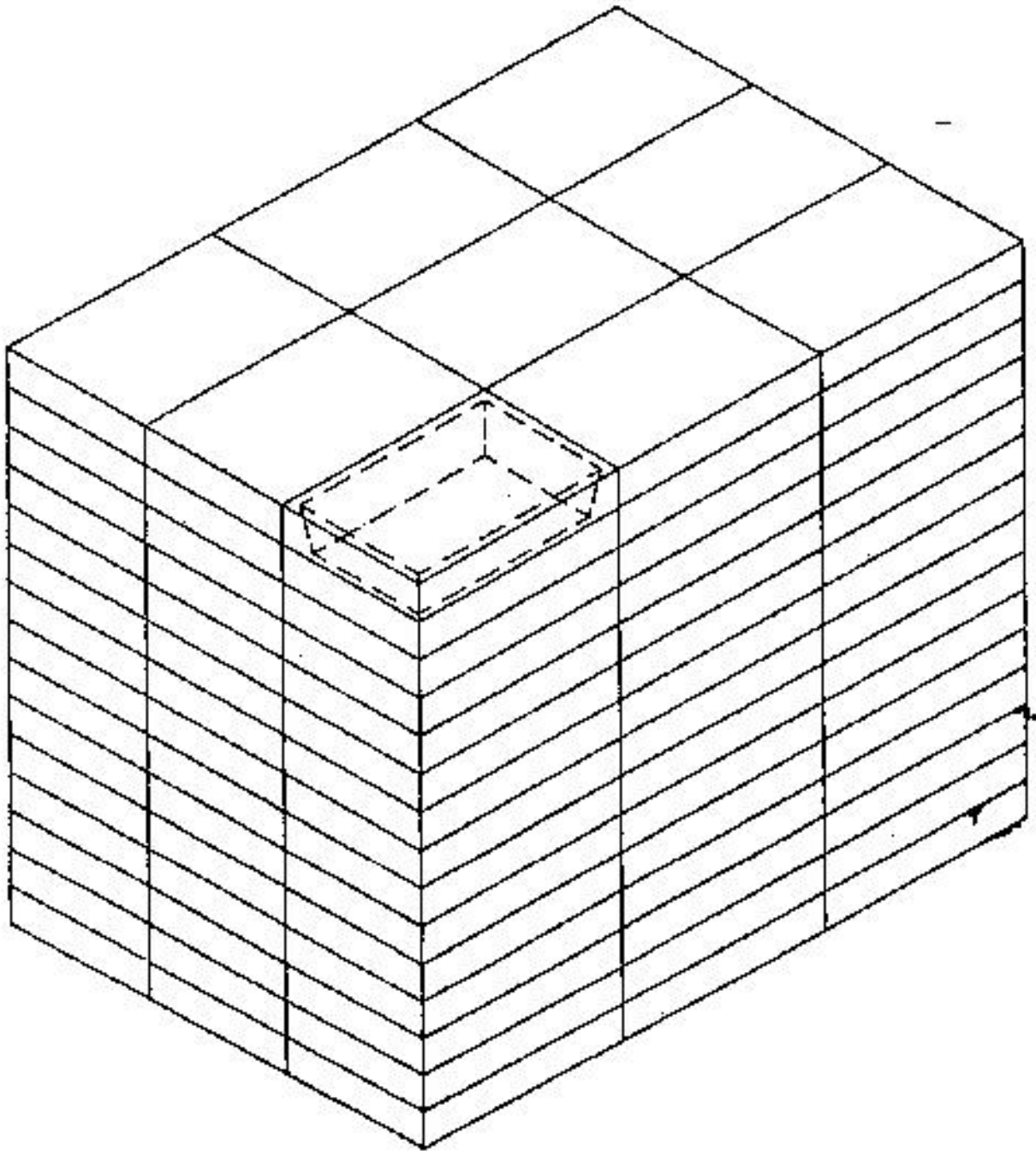
VERTICAL RETORT BASKET

4 TRAYS/LAYER

11 LAYERS/BASKET

44 TRAYS/BASKET





LAGARDE RETORT CRATE

**5 CRATES/RETORT
15 LAYERS
9 TRAYS/LAYER
135 TRAYS/CRATE
675 TRAYS/RETORT**